

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Werner Bodmer and Rainer Armbruster

Serial No.: N/A Art Unit: N/A

Filing Date: Herewith

Title: DEVICE AND METHOD FOR MANUFACTURING ARTICLES
MADE OF PLASTIC

Examiner: N/A

Docket No.: FRR-12928

PRELIMINARY AMENDMENT "A"

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Please amend the above-identified application, prior to examination thereof, in the following manner.

IN THE CLAIMS:

Please amend the claims as follows:

1. A device (1) for injection molding of articles (25) comprising several plastic material components, said device comprising a fixed, first half-mold (3) and a movable, second half-mold (6), said second half-mold being movable relative to the first half-mold to permit opening and closing of the device (1), said device further comprising at least two further half-molds (10, 11) arranged to be jointly movable relative to the first and the second half-molds (3, 6), the further half-molds (10,11), when the device (1) is closed, are arranged between the first and second half-molds (3, 6) such that cavities are formed in each of a first and a second parting plane (32, 33), wherein the two further half-molds (10, 11) comprise means (22) that, when the device (1) opened, serve to transport an article (25) out of a first cavity (21.1) into a second cavity (21.2) such that the article (25) is capable of being injection molded around with a further material component in the second cavity (21.2).
2. (amended) The device (1) according to claim 1, wherein the means (22) is a slide (22).
3. (amended) The device (1) according to claim 1, wherein the means (22) is integrated into a cavity (20, 21).
4. (amended) The device (1) according to claim 1, further comprising a mold carrier (7),

said mold carrier being supported on a bearing capable of being around an axis (A) and arranged to be displaceable at an angle relative to this axis, said mold carrier serves to receive and to jointly move the two further half-molds (10, 11) such that the two further half-molds (10, 11), with the device (1) opened by rotation of the mold carrier (7) around the axis (A) for the purpose of forming cavities (20, 21), are capable of being brought into the working position alternatingly with the first or with the second half-molds (3, 6).

5. (amended) The device (1) according to claim 4, wherein the mold carrier (7) is displaceable by 180° around the axis (A) at a right angle to it.
6. (amended) The device (1) in accordance with claim 5, wherein the mold carrier (7) is respectively supported on two sides by a cross-head (8) in the manner of a bearing, such that the mold carrier (7), with the device (1) opened, is capable of being rotated around the axis (A) and jointly movable with the cross-head (8).
7. (amended) The device (1) according to claim 6, wherein the cross-heads (8) are guided on spars (4).
8. (amended) The device (1) according to 7, wherein the cross-heads (8), for installing and removing the mold carrier (7) and/or the further half-molds (10, 11), are displaceable independently of one another.
9. (amended) The device (1) according to claim 7, wherein the spars (4) guide the

second, movable half-mold (6).

10. (amended) A method for the injection molding of an article made of several plastic material components, wherein, in a first step in a working position of a device (1), a first liquid plastic material is injected into a first cavity (20, 21.1) in a zone of a first parting plane (32) of the device (1) for the molding of an article (25), in a second step the article (25) made of the first plastic material with the device (1) opened in the zone of the first parting plane (32) is brought out of the first cavity (20, 21.1) and into a second cavity (20, 21.2) in a zone of a second parting plane (33) situated at a distance relative to the first parting plane (32), wherein in a third step the article is injection molded around with a further plastic material component in the working position of the device (1).
11. (amended) The method according to claim 10, wherein, while the article (25) is being injected around with the further plastic material component in the second cavity (20, 21.2), simultaneously in the first cavity (20, 21.1), a further article (25) is being injection molded.
12. (amended) The method according to claim 10, wherein the article (25), during the transfer into the second cavity (20, 21.1), is rotated around an axis (A) and laterally displaced (34.1, 34.2, 34.3).]
13. (amended) The method according to claim 10, wherein the first cavity (20, 21.1) is formed by a first half-mold (3) and, alternatingly, by one of at least two further half-

molds (10, 11), which are jointly arranged to be capable of being rotated relative to the first half-mold (3) around an axis (A) and displaceable in parallel to the axis, and wherein the second cavity (20, 21.2) is formed by a further half-mold (6) opposite the first and the two half-molds (10, 11), which are jointly capable of being rotated around an axis and are alternatingly formed by one of these two half-molds.

IN THE ABSTRACT:

Please replace the original abstract with the following:

ABSTRACT OF THE DISCLOSURE

A device (1) and method for injection molding articles (25) with several plastic material components. The device (1) includes a fixed, first half mold (3), a second half-mold (6) that is movable relative to the first half-mold (3) for the purpose of opening and closing the device (1). The device also includes at least two further half-molds (10, 11), which are jointly movable relative to the first and second half-molds (3, 6), and which, in the closed position of the device (1), are situated between the first and the second half-molds (3, 6) such that cavities are formed in each of a first and a second parting plane (32, 33). The two further half-molds (10, 11), which are jointly movable, include a device (22), which in the case of an opened device (1) serves to transport the article (25) out of a first cavity (21.1) into a second cavity (21.2) so that the article (25) can be injection molded around with a further material component in the second cavity (21.2).

REMARKS

Attached hereto is a marked-up version of the changes made to the application by the present Amendment. If clarification of the amendment or application is desired, or if issues are present which the Examiner believes may be quickly resolved, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. FRR-12928.

Respectfully submitted,

RANKIN, HILL, PORTER & CLARK LLP

By: 
David E. Spaw, Reg. No. 34732

700 Huntington Building
925 Euclid Avenue
Cleveland, Ohio 44115-1405
(216) 566-9700
Customer No. 007609

Attachment: Marked-up version of Amendments

IN THE CLAIMS:

The claims have been amended as follows:

1. (amended) ~~{Device}~~ A device (1) for ~~{the}~~ injection ~~{moulding}~~ molding of articles (25) comprising several plastic material components, ~~{with a first half-mould (3) arranged as fixed, with a second half-mould (6) for the purpose of opening and closing the device (1) arranged as}~~ said device comprising a fixed, first half-mold (3) and a movable, second half-mold (6), said second half-mold being movable relative to the first half-{mould (3), and } mold to permit opening and closing of the device (1), said device further comprising at least two further half-~~{moulds}~~ molds (10, 11) arranged to be jointly movable relative to the first and the second half-~~{moulds}~~ molds (3, 6), the further half-~~{moulds}~~ molds (10,11) ~~{in closing position of},~~ when the device (1) ~~{being}~~ is closed, are arranged between the first and ~~{the second half-moulds (3, 6) in such a manner, that in two parting planes (32, 33), namely in a first and in}~~ second half-molds (3, 6) such that cavities are formed in each of a first and a second parting plane (32, 33), {cavities (20, 21)-are formed, ~~characterised in that}~~ wherein the two further half-~~{moulds}~~ molds (10, 11) ~~{arranged to be jointly movable}~~ comprise means (22){, which with} that, when the device (1) opened, serve to transport an article (25) out of a first cavity (21.1) into a second cavity (21.2) ~~{in}~~ such {a manner,} that the article (25) is capable of being injection ~~{moulded}~~ molded around with a further material component in the second cavity (21.2).

2. (amended) ~~{Device (1) in accordance with claim 1, characterised in that}~~ The device (1)
according to claim 1, wherein the means (22) is a slide (22).
3. (amended) ~~{Device}~~ The device (1) according to ~~{one of the preceding claims,~~
~~characterised in that}~~ claim 1, wherein the means (22) is integrated into a cavity (20,
21).
4. (amended) ~~{Device (1) in accordance with one of the preceding claims, characterised in~~
~~that a mould carrier (7) is present, which is}~~ The device (1) according to claim 1, further
comprising a mold carrier (7), said mold carrier being supported on a bearing capable of
being around an axis (A) and arranged to be displaceable at an angle relative to this
axis, {and which} said mold carrier serves to receive and to jointly move the two further
half-{moulds} molds (10, 11) {in} such {a manner,} that the two further half-{moulds}
molds (10, 11), with the device (1) opened by rotation of the {mould} mold carrier (7)
around the axis (A) for the purpose of forming cavities (20, 21), are capable of being
brought into the working position alternatingly with the first or with the second half-
{moulds} molds (3, 6).
5. (amended) ~~{Device}~~ The device (1) according to claim 4, ~~{characterised in that the~~
~~mould}~~ wherein the mold carrier (7) is displaceable by 180° around the axis (A) at a
right angle to it.

6. (amended) ~~{Device}~~ The device (1) in accordance with claim 5, ~~{characterised in that the mould}~~ wherein the mold carrier (7) is respectively supported on two sides by a cross-head (8) in the manner of a bearing, ~~{in}~~ such ~~{a way,}~~ that the ~~{mould}~~ mold carrier (7), with the device (1) opened, is capable of being rotated around the axis (A) and jointly movable with the cross-~~{heads}~~ head (8).
7. (amended) ~~{Device}~~ The device (1) according to claim 6, ~~{characterised in that}~~ wherein the cross-heads (8) are guided on spars (4).
8. (amended) ~~{Device (1) in accordance with claim 7, characterised in that}~~ The device (1) according to 7, wherein the cross-heads (8), for ~~{the purpose of}~~ installing and removing the ~~{mould}~~ mold carrier (7) and/or the further half-~~{moulds}~~ molds (10, 11), are displaceable independently of one another.
9. (amended) ~~{Device}~~ The device (1) according to ~~{one of the claims 7 or 8, characterised in that}~~ claim 7, wherein the spars (4) ~~{serve for guiding}~~ guide the second, movable half-~~{mould}~~ mold (6).
10. (amended) ~~{Method}~~ A method for the injection ~~{moulding}~~ molding of an article made of several plastic material components, ~~{in the case of which}~~ wherein, in a first step in a working position of a device (1), a first liquid plastic material is injected into a first cavity (20, 21.1) in ~~{the}~~ a zone of a first parting plane (32) of the device (1) for the

~~[moulding]~~ molding of an article (25), in a second step the article (25) made of the first plastic material with the device (1) opened in the zone of the first parting plane (32) is brought out of the first cavity (20, 21.1) and into a second cavity (20, 21.2) in ~~[the]~~ a zone of a second parting plane (33) situated at a distance relative to the first parting plane (32), ~~[where]~~ wherein in a third step ~~[it]~~ the article is injection ~~[moulded]~~ molded around with a further plastic material component in the working position of the device (1).

11. (amended) ~~[Method]~~ The method according to claim 10, ~~[characterised in that, while in the second cavity (20, 21.2)]~~ wherein, while the article (25) is being injected around with the further plastic material component in the second cavity (20, 21.2), simultaneously in the first cavity (20, 21.1), a further article (25) is being injection ~~[moulded.]~~ molded.
12. (amended) ~~[Method in accordance with one of the claims 10 or 11, characterised in that the article (25)]~~ The method according to claim 10, wherein the article (25), during the transfer into the second cavity (20, 21.1), is rotated around an axis (A) and laterally displaced (34.1, 34.2, 34.3).
13. (amended) ~~[Method]~~ The method according to ~~[one of the claims 10 to 12, characterised in that]~~ claim 10, wherein the first cavity (20, 21.1) is formed by a first half-~~[mould]~~ mold (3) and, alternately, by one of at least two further half-~~[moulds]~~

molds (10, 11), which are jointly arranged to be capable of being rotated relative to the first half-~~{mould}~~ mold (3) around an axis (A) and displaceable in parallel to ~~{it}~~ the axis, and ~~{that}~~ wherein the second cavity (20, 21.2) is formed by a further half-~~{mould}~~ mold (6) opposite the first and the two half-~~{moulds}~~ molds (10, 11), which are jointly capable of being rotated around an axis and ~~{is}~~ are alternately formed by one of these two half-~~{moulds.}~~ molds.

IN THE ABSTRACT:

The Abstract of the Disclosure has been amended as follows:

ABSTRACT ~~{THE INVENTION IS RELATED TO A}~~ OF THE
DISCLOSURE

A device (1) and ~~{to a}~~ method for ~~{the}~~ injection ~~{moulding of}~~ molding articles (25) with several plastic material components. ~~{This}~~ The device (1) ~~{comprises a}~~ includes a fixed, first half ~~{mould arranged as fixed}~~ mold (3), a second half-~~{mould}~~ mold (6) ~~{arranged as}~~ that is movable relative to the first half-~~{mould}~~ mold (3) for the purpose of opening and closing the device (1). ~~{In addition, the}~~ The device ~~{(1) comprises}~~ also includes at least two further half-~~{moulds}~~ molds (10, 11), which are ~~{arranged as}~~ jointly movable relative to the first and second half-~~{moulds}~~ molds (3, 6), and which, in the ~~{closing}~~ closed position of the device (1), are situated between the first and the second half-~~{moulds (3, 6), so that in two~~

~~parting planes (32, 33), namely in a first and in~~ molds (3, 6) such that cavities are formed in
each of a first and a second parting plane (32, 33)~~[- cavities (20, 21) are formed]~~. The two
further half-~~[moulds]~~ molds (10, 11) ~~[arranged as]~~, which are jointly movable ~~[comprise~~
~~means]~~, include a device (22), which in the case of an opened device (1) ~~[serve for the~~
~~transportation of]~~ serves to transport the article (25) out of a first cavity (21.1) into a second
cavity (21.2) ~~[in such a manner,]~~ so that the article (25) ~~[is capable of being]~~ can be injection
~~[moulded]~~ molded around with a further material component in the second cavity (21.2).
~~[(Figure 2)]~~